Fact Sheet

A GEOGRAPHIC INFORMATION SYSTEM TO SUPPORT ENVIRONMENTAL RESTORATION ACTIVITIES AT ARMY INSTALLATIONS IN ALASKA

PROBLEM

Environmental restoration activities for the Defense Environmental Restoration Account (DERA) at Army installations in Alaska involve multiple studies of numerous sites with various types of soil and groundwater contamination. These studies generate vast amounts of physical and chemical data. Effective management of these databases, and centralized access to information based upon them, are required by regulators, environmental and engineering program managers, and various project personnel. Regulators, in particular, require rapid access to this information for decision-making.

SOLUTION

At the request of the U.S. Army Alaska (USARAK), a geographic information system is being developed to serve as a central access point for all data and information relevant to environmental investigations, remediation, and restoration at installations in Alaska. Fort Wainwright investigations under DERA are being used as the model for the USARAK GIS. Remedial investigation and feasibility study (RI/FS) begun in 1989 provide basewide and site-specific data that may include aerial photographs; CAD drawings of site infrastructure; maps of vegetation, surficial geology, and permafrost; and various metadata. Drilling records from borehole, piezometer, and monitoring wells must be combined with interpretations of geophysical data, such as ground-penetrating radar transects, groundwater level and flow parameter data, and the results of laboratory chemical analyses to provide a complete picture of subsurface conditions. Software tools must be developed to allow managers to browse, display, and query all aspects of the database, and to generate information as maps, geologic cross sections, or tabular data for input to other models. An extensive World Wide Web-based database will provide easy access to data sources, quality, and other site information.

STATUS

Software development and database integration are being conducted by personnel from the Remote Sensing and GIS Center and the Geological Sciences Division at CRREL. Activities are being closely coordinated with the USACE Alaska District (CENPA). Cooperators on these investigations include the USGS, University of Alaska–Fairbanks, Lehigh University, and Colorado State University.

The geographic information system hardware and software will be installed at USARAK Public Works during the spring of 1996. Client software for personal computers will continue to be developed through 1996. Further software development will include tools for three-dimensional visualization of geologic features and contaminant fate and transport. Multiple databases, as well as additional sites, are being added.

CONTACTS

Dr. Daniel Lawson
907-384-2744
Fax 907-384-3047
dlawson@crrel.usace.army.mil

Joel Schlagel
603-646-4387
Fax 603-646-4750
joel@crrel.usace.army.mil

Dr. Joyce Nagle
603-646-4161
Fax 603-646-4448
nagle@crrel.usace.army.mil

April 1996

US Army Corps of Engineers

Cold Regions Research & Engineering Laboratory

CRREL, 72 Lyme Road, Hanover, NH 03755-1290